AMENDMENTS TO THE DRAWINGS

The attached replacement sheet of drawings includes new Figs. 1-3, of which new Fig. 1 shows an array of transducers, as described in paragraph [0023] of the published patent application. No new matter is added.

Attachment: Replacement Sheet

REMARKS

This paper is filed in response to the office action mailed on April 10, 2008. In that office action, the drawings are objected to for failing to disclose every limitation specified in the claims; claim 1 is rejected for lacking sufficient antecedent basis; and claims 1-14 are rejected as being obvious in view of prior art. Applicants respectfully request reconsideration in light of the foregoing amendments and following remarks.

Drawings

In the outstanding office action, the drawings were objected to under 37 C.F.R. 1.83(a) for failing to disclose the "array of several ultrasonic transducers," as specified in claims 10 and 14, and for failing to disclose the "pressure probe," as specified in claim 6. The Replacement Sheet of drawings of new Figs. 1-3, submitted herewith, clearly shows the array of several ultrasonic transducers. Support for the same is found throughout the specification, and more particularly, is found in paragraph [0023] of the published patent application. Furthermore, claim 6 has been amended to recite a "transducer" rather than a "pressure probe." No new matter has been added. As every limitation specified in the claims is now shown in the drawings, Applicants respectfully submit that the objection to the drawings must be withdrawn.

Claim Rejections – 35 U.S.C. 112

Additionally, claim 1 stands rejected under the second paragraph of 35 U.S.C. 112 for failing to provide sufficient antecedent basis for "the fluid placed between two surfaces in a rheometer." In response, Applicants have amended lines 1-2 of claim 1 to recite "[a] method for characterizing a fluid" so as to provide antecedent basis for "the fluid placed between two surfaces." Support for such a fluid is found throughout the specification. No new matter has been added. Accordingly, Applicants respectfully submit that this rejection should be withdrawn.

Claim Rejections – 35 U.S.C. 103

In the office action, claims 1-14 stand rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,535,796 ("Sierro") in view of U.S. Patent No. 6,378,357 ("Han"). In response, claim 8 has been canceled, and claims 1, 4, 6 and 11 have

been amended to further distinguish the present application from the prior art. Applicants respectfully request reconsideration in light of the currently amended claims and the following remarks.

To support an obviousness rejection, MPEP §2143.03 requires "all words of a claim to be considered" and MPEP § 2141.02 requires consideration of the "[claimed] invention and prior art as a whole." Further, the Board of Patent Appeals and Interferences recently confirmed that a proper, post-KSR obviousness determination still requires the Office to make "a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art." *See, In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995).

As currently amended, claim 1, as well as claims 2-7, 9 and 10 dependent thereon, specifies a method for characterizing a fluid containing particles that reflect ultrasound waves, wherein a specimen of the fluid placed between two surfaces in a rheometer in order to measure rheological characteristics of the specimen is stressed when the two surfaces undergo relative movement one with respect to the other, wherein local ultrasonic data relating to the deformation of the specimen are simultaneously collected by ultrasonic wave measurement means and by ultrasonic data intercorrelation, wherein rheological characteristics of the fluid are determined, and wherein several velocity profiles along a Z axis are determined in succession and at a frequency of between 0.1 Hz and 1 kHz.

Currently amended claim 11, as well as claims 12-14 dependent thereon, specifies a device for characterizing a fluid including a rheometer for applying, between two surfaces in relative movement one with respect to the other, stresses to a specimen of the fluid lying between these two surfaces and for measuring rheological characteristics averaged over the volume of the specimen, wherein it further includes an ultrasonic device for measuring local deformations by ultrasonic wave measurement means, and deducing local rheological characteristics of the fluid. The ultrasonic device comprises an ultrasonic wave generator for sending such waves into the specimen, in a sequence of several firings, and an ultrasonic wave receiver for detecting the echoes reflected by the reflecting particles of the fluid that correspond to each ultrasonic wave firing, these echoes being used to locally monitor the deformation of the fluid as a function of time.

Sierro is directed toward a process and a device for characterizing complex fluids, wherein a sample is sheared between two moving surfaces of a rheometer to measure rheological characteristics of the stressed fluid sample. However, Sierro fails to disclose the currently claimed method for characterizing a liquid, wherein local ultrasonic data relating to the deformation of the specimen are simultaneously collected by ultrasonic wave measurements and by ultrasonic data intercorrelation, wherein rheological characteristics of the fluid are determined, and wherein several velocity profiles along a Z axis are determined in succession and at a frequency of between 0.1 Hz and 1 kHz. Sierro also fails to disclose the rheometer device of currently amended claim 11 having an ultrasonic wave generator and an ultrasonic wave receiver.

Han is directed toward a method for measuring rheological properties of fluid flow using ultrasonic signals, but fails to supply the aforementioned deficiencies of Sierro. More specifically, Han does not disclose a method in which local ultrasonic data relating to the deformation of the specimen are simultaneously collected by ultrasonic wave measurement means and by ultrasonic data intercorrelation, wherein rheological characteristics of the fluid are determined, and wherein several velocity profiles along a Z axis are determined in succession and at a frequency of between 0.1 Hz and 1 kHz. Additionally, Han fails to supply Sierro with a rheometer having an ultrasonic wave generator and an ultrasonic wave receiver, as specified in claims 11-14.

As the purported combination of Sierro and Han fails to teach every limitation of the pending claims, Applicants respectfully submit that the obviousness rejection of claims 1-7, 9-14, based upon the combination of Sierro and Han must also fail and should be withdrawn.

Furthermore, the Examiner states that combining Sierro with Han to provide the product package as claimed would have been obvious since Sierro discloses that "the use of ultrasound to measure various parameters of the sample would be useful" and that Han teaches the use of ultrasound waves in rheology. However, Applicants disagree as discussed more specifically below.

'A prima facie case of obviousness can be rebutted if the applicant ... can show "that the art in any material respect taught away" from the claimed invention.' *In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997) (quoting *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)). 'A reference may be said to teach away when a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant.' *Tec Air, Inc. v. Denso Mfg. Mich. Inc.,* 192 F.3d 1353, 1360, 52 USPQ2d 1294, 1298 (Fed. Cir. 1999).

Column 10, lines 18-22 of Sierro recites that "the automated measurement device can also operate with other types of shearing cells to analyze various *other* parameters, such as the response of a fluid to radiation (optical, X, photons, neutrons) and to elastic waves (acoustic, ultrasound, infrasound), etc." Nothing in Sierro discloses that ultrasound waves can be used for *rheological* measurements. Sierro merely discloses that *other* parameters may be used in conjunction with a rheometer to analyze the response of a fluid "to elastic waves," such as ultrasound waves. In other words, contrary to the Examiner's assertions, Sierro does not teach that ultrasound waves could be used to measure *rheological* parameters of a sample, but only the effect of ultrasound waves on a sample. Furthermore, Sierro is only directed to global analyses whereas the present application can be used for global and local analyses.

Han discloses an inline method and is irrelevant to the present application. Particularly, an inline method is used for on-site measurements, such as pipes in industrial production units. However, the method specified in claim 1, as well as claims 2-7, 9 and 10 dependent thereon, is purely an offline method, or a method used for laboratory characterization on much smaller scales and samples. Furthermore, Han relies on a rheological model whose predictions are compared to the measured velocity, as specified in claims 1-4 of Han. However, the present application does not rely on any rheological models. Also, Han uses local measurements to determine global parameters whereas the present application only uses local measurements to determine local parameters.

Furthermore, the geometries in the methods disclosed by Sierro and Han are completely different. In Sierro, the fluid is strained by a shear strain, also known as a Couette flow, whereas in Han, the fluid is strained by a Poiseuil flow. Whether a successful

technique for a given geometry would have been as successful for another is a question to which no definite answer is available. Therefore, a person having skill in the art, who is well aware that rheometer geometry influences rheological measurements, will not straightforwardly be urged to apply ultrasound waves to Sierro, much less to combine Sierro with Han.

Finally, the method disclosed by Sierro is a conventional rheological method, which does not provide any local information. Although, Sierro teaches that a sequence of acquisition is possible, it does not disclose that the succession of velocity profile determination at a frequency of between 0.1 Hz and 1 kHz is possible. Further, a person having skill in the art at the time the present application was filed, would have known that this frequency was impossible to reach using such a conventional rheological method. In other words, such a person having skill in the art would not have considered combining Sierro with Han for the reasons stated above, and more importantly, would not have reached a solution as specified in the pending claims of the present application.

As discussed above, the subject matter of each of the Sierro and Han references teaches away from the present application, and from one another. Therefore, it would not have been obvious to modify either of Sierro and Han to provide all of the limitations of the pending claims, or to combine Sierro with Han to provide all of the limitations of the pending claims. As the prior art references teach away from the claimed product package, Applicants respectfully submit that the obviousness rejection of the pending claims, claims 1-7, 9-14, based on the combination of Sierro and Han must also fail and should be withdrawn.

CONCLUSION

In light of the foregoing, Applicants respectfully submit that the pending claims are in condition for allowance and respectfully solicit the same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned attorney. The undersigned verifies that he is authorized to act on behalf of the assignee of the present application.

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Respectfully submitted,

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